vicianus. Here the male and female resemble each other, the sexual character being transmitted in an equal degree to both sexes. The only trace of the bars beneath is noticed in the winter dress of the male. According to Darwin, when the variation is sexual, and the adult male molts twice in a season, the winter dress resembles the primitive or immature plumage.

C. ludovicianus var. *robustus*.—The account of the plumage of this bird in its different stages is too meagre to serve our purpose. It is said to be without wavy bars beneath, and is "tinged with ashy laterally and across breast," in the adult stage. It is probably intermediate between *ludovicianus* and var. *excubitoroides*.

It is interesting to note in this connection the range of this genus spreading over half a continent.

The progenitor, *borealis*, inhabits "Arctic America; in winter south into the United States, especially into the northern portions." *Ludovicianus*, "South Atlantic and Gulf States." *Robustus*, "California and fur countries." *Excubitoroides*, "Western North America from Pacific coast east a little beyond the Mississippi, and to Texas. Nearly all of Mexico."

I am aware that this genus has also been modified in other ways by natural selection, but only those parts have been chosen which serve the purpose of showing their descent through sexual selection.

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EDITORS' TABLE.

EDITORS: A. S. PACKARD, JR., AND E. D. COPE.

—— There is still a disposition in certain quarters to disparage and even to ridicule attempts at the construction of genealogical trees. One criticism made is that they are nothing less than systems of classification. To this we would reply that of course they are. Our systems of classifications are efforts to display in a graphic way our conceptions of the affinities of natural groups. The more generalized forms are placed lowest and the more specialized higher, and the aberrant forms are placed at a distance from the more typical. Some naturalists arrange natural groups in the form of constellations; but the greater number, irrespective of any theory, copy, simply for convenience, the form of a tree with branches of unequal size and length. Unconsciously every systematic biologist thus constructs a genealogical tree. If now, he be an evolu-

tionist, believing that there is a blood relationship between the branches, twigs, and trunk and roots of his tree-like system, he acknowledges the fact that his graphic presentation of his systematic views really approximately represents what has actually taken place in nature. The branches of his genealogical tree are approximative to what practically are lines of descent or ascent. Certain twigs may be bent backward or downward, and they represent degradational paths, along which retrograde forms have traveled.

The historian of families or of nations constructs genealogical trees, and is it illogical that the naturalist should? Errors creep into historical genealogical trees. No two naturalists may construct the same form of genealogical tree for the same order or class; so no two observers agree as regards the classification of any group. Because our attempts at expressing our conceptions as to the origin and descent of certain groups are imperfect and provisional, it does not follow that the attempt should be ridiculed by those naturalists who are excellent as systematists and anatomists, but who do not work with their thinking caps on.

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RECENT LITERATURE.

SEELEY'S HISTORY OF THE SKULL.[1]—This pamphlet is a review of the various relations between the skull and the other structures of a vertebrate, with a view "to stimulate some other fellow-worker to seek for the meaning" of the unknown points in the problem. Professor Seeley shows: (1) That comparative anatomy proves an increasing simplification and approximation to the vertebral plan as we ascend the scale from fishes to mammals; yet that embryology shows that the skull originates in structures that have little in common with the vertebræ. (2) That a skull is difficult to define, for the branchial arches appear to be survivals of the somatic clefts of Amphioxus, and the visceral clefts of an embryo mammal are homologous with the branchial arches of a fish. (3) That a skull, as usually understood, consists of, first, a brain-case; second, of jaws, and third, of structures connected with respiration, which parts may, as in the sharks, have been originally separate. (4) That the bones surrounding the nasal, optic and auditory capsules are remarkably constant, especially the latter, so that it would appear that a brain-case "is a union of ossifications about sense-capsules that have come to surround the brain," yet this will not explain either the number or arrangement of the bones. (5) That the cartilaginous cranium originates from the parachordals and trabeculæ, which primitive elements do not suggest that tri-partite segmentation of the skull which is finally devel-

[1] *The History of the Skull*, by Professor H. G. Seeley, F.R.S., F.L.S. Read before the Science Society, of King's College, London.